

# TECHNOLOGY TRANSFER

## Technology Profile Fact Sheet

**Title:** L-band F1:F1 Repeater

**Alias:** None

**Technical Challenge:** Virtually all relays are described as F1:F2 units, which use frequency conversion to retransmit the signal and to avoid the problem of feedback and concurrent oscillation. However, this procedure necessitates a change in frequency, often requiring expensive and time-consuming modifications to fixed configuration systems in order to improve RF reception.

**Description:** The purpose of this device is to receive, amplify and retransmit an L band RF signal (1-2 GHz) in order to improve the signal-to-noise ration and extend the useful operating range of a transmitter, all without the need to change the original input frequency. The antennas are mounted back to back to place them in each others' back lobe, separating the antennas with a metal backplane and maintaining an orthogonal orientation to the receive and transmit antennas. A microwave absorber is placed around each antenna to further decrease diffraction backscatter (feedback). In testing the unit, no oscillation was observed in the operation. A remote controlled FET switch controls the bias power to the amplifier allowing remote control of the unit.

Interposing this unit in place provides the ability to improve operating range dramatically, without the necessity of modifying each transmitting and receiving link.

**Demonstration Capability:** Yes

**Potential Commercial Application(s):** This design has a general purpose application to allow point-to- point links to improve their signal-to-noise ratio under real operating conditions. It can be placed without having to change frequency allocations or to undertake expensive modifications to the infrastructure.

**Patent Status:** An application has been filed with USPTO.

**Reference Number:** 1279